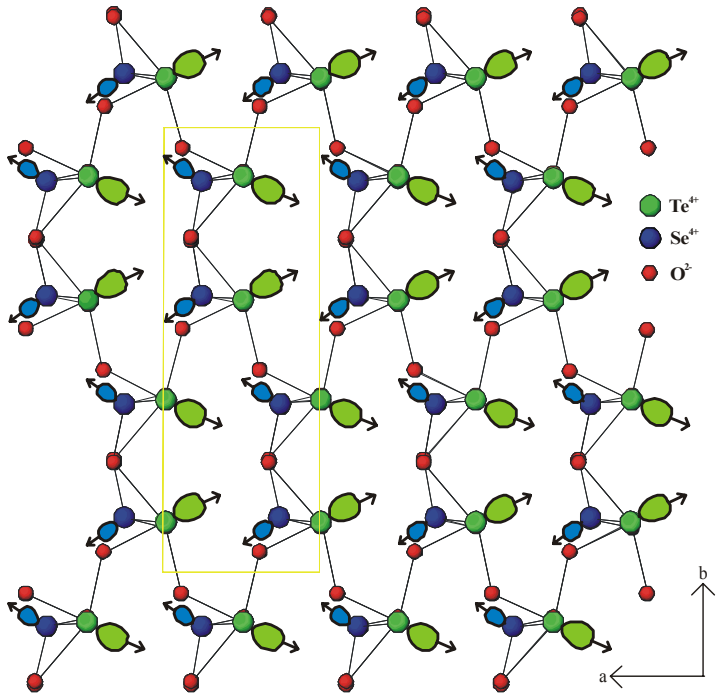
Second-Harmonic Generating Materials

- We synthesize and characterize new oxide materials that have second-order non-linear optical (NLO) behavior, i.e. second-harmonic generation (SHG). Our focus is on oxide materials containing metal cations in asymmetric coordination environments. We have recently synthesized and characterized several of these materials. The Figure shows the structure of SHG active $TeSeO_4$.



Ball-and-stick diagram of $TeSeO_4$. The arrows indicate the approximate magnitude and direction of the dipole moments on the SeO_3 and TeO_5 polyhedra.

- Porter, Y., Ok, K.M., Bhuvanesh, N.S.P., Halasyamani, P.S., "Synthesis and Characterization of Te_2SeO_7 - A Powder SHG study of TeO_2, Te_2SeO_7, Te_2O_5, and $TeSeO_4$", Chem. Mater., 13, *1910*, **2001**.

- Ok, K.M., Bhuvanesh, N.S.P., and Halasyamani, P.S., *$SbSb_xM_{1-x}O_4$ (M = Nb^V or Ta^V): Solid Solution Behavior and Second-Harmonic Generating Properties*, J.Solid State Chem., 161, *57*, **2001**.

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